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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,189	12/06/2001	Thomas W. Konowalchuk	LFT000 CIP1	6744

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EXAMINER	
HUI, SAN MING R	
ART UNIT	**PAPER NUMBER**
1617	

DATE MAILED: 02/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/016,189	KONOWALCHUK ET AL.	
	Examiner	Art Unit	
	San-ming Hui	1617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,11-22 and 24-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11-22 and 24-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 5, 2004 has been entered.

Claims 1-9, 11-22, and 24-33 are pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9, 11-22, and 24-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "synergistic combination" recited in claims 1, 9, 21, and 22 renders the claims indefinite because it is not clear what combination between the alcohols or diols and the acids would produce a synergistic combination. The instant specification does not define what a "synergistic combination" would be.

The amendments filed November 5, 2004 amends the claims so that the instant claims are directed to a method of inactivating a virus by a composition consisting essentially of a carrier and a synergistic combination of alcohols or diols and an acid. Examiner considers the rejections under 35 USC 103 (a) set forth in the previous office action as properly reject the instant claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6, 9, 11-22, and 24-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu et al. (US Patent 5,385,938) in view of Poli et al. (Food Chemistry,1979;443:251-258, reference of record), Wenninger (International Cosmetic Ingredient Dictionary and Handbook, 7th ed., vol. 1, page 163-168), Merck Index (11th ed., 1989, Glycolic acid, monograph 4394, page 439:), and Pamukoff, reference of record.

Yu et al. teaches a topical composition with glycolic acid is the active and about 12.4% ethanol as solvent (See col. 14, Example 1). Yu et al. also teaches that the composition has pH of 3.0 (See col. 14, Example 1). Yu et al. also teaches that the glycolic acid composition is useful to e/adicate lesions such as wads, which is a viral infection of papallomas virus (See col. 30, line 10 - col. 31 , line 2). Yu et al. also teaches that other pharmaceutically acceptable vehicles other than water and ethanol may be used (See col. 13, lines 1 1-13). Yu et al. also teaches that the concentration of hydroxyacids, including glycolic acid, may range from 0.02 to 12M (See col. 13, lines 17-19). Yu et al. also teaches that the composition may be formulated into gel, ointment, cream, lotion, and other cosmetic and pharmaceutical preparation (See col. 13, lines 4-6).

Yu et al. does not expressly teach 1,3-butanediol, as known as butylenes glycol, is useful as pharmaceutical vehicle. Yu et al. does not expressly teach that the glycolic

acid containing topical composition as useful in inactivating lesions caused by viruses wlthin the Herpesvirdae. Yu et al. does not expressly teach the composition having a specific pH of 2.45.

Poli et al. teaches that glycolic acid is virucidal against herpevirus, orthomyxovirus (influenza virus), and Rhabdovirus (See padicularly page 253, Table 1).

Wenninger teaches that butylenes glycol as useful as solvent in numerous cosmetic marketed products (See page 163-168).

Merck Index teaches that the pH 0.5% of glycolic acid solution as 2.50 (See the glycolic acid monograph). Examiner notes that 0.5% of glycolic acid is about 0.31M.

Pamukoff teaches that 1-10% ethyl alcohol containing composition for treating viral infections broadly, in particularly the infections that are caused by Herpes virus such as Herpes Simplex 1, Herpes Simplex 2, and common cold viruses (See particularly page 2, first paragraph, also page 7-9, Examples 2-5, also claims 1 and 2). Pamukoff also teaches that this antiviral composition can be formulated into creams (See padicularly page 2, line 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ butylenes glycol as solvent in the topical wart-treating composition of Yu et al. and adjust the pH to 2.45 and use it to inactivate the same viruses. It would have been obvious to one of ordinary skill in the ad at the time the invention was made to employ the glycolic acid containing topical composition, in the herein claimed concentration, in the inactivation of viruses belong to the Herpesvirdae family.

One of ordinary skill in the art would have been motivated to employ butylenes glycol as solvent in the topical wad-treating composition of Yu et al. and adjust the pH to 2.45. Butylenes glycol is known to be useful in cosmetic products as solvent. Employing any known solvents, including butylene glycol, into a topical composition would have been reasonably expected to be useful in formulating a topical wart-treating composition and using it to activate the same viruses. Moreover, the optimization of result effect parameters (e.g., pH of the composition and the amount of active (glycolic acid) is obvious as being within the skill of the artisan based on the teaching of Merck Index, absent evidence to the contrary.

One of ordinary skill in the art would have been motivated to employ the glycolic acid containing topical composition to inactivate viruses of the Herpesvirdae family. Based on the teachings of Poli et al. and Yu et al., glycolic acid is known to be effective in killing herpes virus. Therefore, applying a glycolic acid composition would have been reasonably expected to be effective in inactivating the same virus.

Pamukoff provides an additional motivation to combine the composition of Pamukoff and Yu et al. to form a glycolic acid-ethanol-containing composition useful in the instant method. Both compositions are known to be useful in activating virus individually, it flows logically to combine these compositions useful for the very same purpose, absent evidence to the contrary (See *In re Kerkhoven* 205 USPQ 1069).

Claims 1 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhatia et al. (Indian Journal of Animal Sciences 1998*, 6846): 518-520, reference of record) and Pamukoff (Canadian Patent: CA 122164, reference of record).

Bhatia et al. teaches that 0.4N hydrochloric acid is effective in inactivating sheep pox virus (See padicularly page 519, col. 1, Table 1 and col. 2, third paragraph). Bhatia et al. also teaches that the "Ranch" strain of goat pox virus is more sensitive in acidic pH 3.0 as there was 5 log fall in the titer in the acidic PH (See page 519, col. 2, third paragraph).

Pamukoff teaches that 1-10% ethyl alcohol containing composition for treating viral infections broadly, in particularly the infections that are caused by Herpes virus such as Herpes Simplex 1, Herpes Simplex 2, and common cold viruses (See particularly page 2, first paragraph', also page 7-9, Examples 2-5*, also claims 1 and 2). Pamukoff also teaches that this antiviral composition can be formulated into creams (See padicularly page 2, line 3).

The references do not expressly teach the herein claimed virus-inactivating method employing a composition comprises both ethanol and hydrochloric acid. The references do not expressly teach the PH of the composition used in the virus-inactivation method as 2.45.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a composition comprises both ethanol and hydrochloric acid in a method for inactivating virus. It would have been obvious to one of ordinary

skill in the art at the time the invention was made to adjust the pH of the composition to 2.45.

One of ordinary skill in the art would have been motivated to employ a composition comprises both ethanol and hydrochloric acid in a method for inactivating virus. Both the composition of Bhatia et al. and Pamukoff are known to be useful in inactivating virus individually. Therefore, it flows logically to combine the two compositions, which are known to be useful to inactivate viruses individually, into a single composition useful for the very same purpose is *prima facie* obvious (See *In re Kerkhoven* 205 USPQ 1069). Furthermore, optimization of the pH to 2.45would be considered obvious as being within the purview of skilled artisan since the pH of the composition is essentially the amount of acid added. Absent showing evidence of the criticality of the specific amount of acid added, to adjust the effective amount of acid from pH 3.0 to 2.45 would be considered obvious as being within the purview of the skilled artisan.

Response to Arguments

Applicant's arguments filed November 5, 2004 averring the amphoteric compounds, which are required to be in the composition in order to produce an pH of 2.45, being excluded by the claims as amended have been fully considered but they are not persuasive. The claims herein are given the broadest reasonable interpretation. The herein claimed method of inactivating viruses employs a composition having an alcohol and an acid. Although in the pH of the particular example of Yu without the

pseudoamphoteric compound is 1.9, Yu teaches the effective amount of glycolic acid can be in the range of 0.02 to 12M (See col. 13, lines 17-19). As discussed in the rejections above, when the concentration of glycolic acid is about 0.31 M, the pH is about 2.5, which falls within the herein claimed range. Moreover, Yu et al. clearly disclosed that the amphoteric compounds are not necessarily present in the composition of Yu et al. in order to have antiviral activities (See col. 11, lines 55-59). Furthermore, the amphoteric compounds can be considered as a pH adjusting agents which are pharmaceutical carriers and are allowed in the composition (See for example, page 13, second-to-last paragraph, the instant specification). Therefore, whether the composition "consisting essentially of" or "consisting of" the herein claimed components, the cited prior arts render the instant claims obvious.

Applicant's rebuttal arguments file November 5, 2004 averring the cited prior art's failure to teach or suggest glycolic acid as effective in inactivating herpes virus, have been considered, but are not found persuasive. Although the cited prior art not expressly teaches the pH is proportional to the virus-inactivating effectiveness, based on the teachings of Poli et al. and Yu et al., glycolic acid is known to be effective in killing herpes virus. Therefore, applying a glycolic acid composition, in the concentration (pH) Yu suggested, to inactivate herpes viruses would have been reasonably expected to be effective.

Applicant's rebuttal arguments file November 5, 2004 averring the cited prior art's failure to provide motivation to incorporate 1,3-butanediol into the herein claimed method, have been considered, but are not found persuasive. 1,3-butanediol is known

as a commonly used solvent for pharmaceutical use. In other words, 1,3-butanediol is a well-known pharmaceutically acceptable carier. Incorporating such commonly used solvent in pharmaceutical art into the pharmaceutical composition of Yu for inactivating virus would be obvious as the selection of one or another commonly used solvent would be seen as a simple selection from among obvious alternatives.

Applicant's rebuttal arguments file November 5, 2004 averring the cited prior art not teaching the critical pH values of the herein claimed invention have been considered, but are not found persuasive. Examiner notes that the pH of the composition is depending on the concentration of the acid employed. As discussed above, applying a glycolic acid composition, in the concentration Yu suggested, to inactivate herpes viruses would have been reasonably expected to be effective. Applicant fails to demonstrate the criticality of the specific pH value of the composition.

Applicant's rebuttal arguments filed November 5, 2004 averring the specific exclusion of halide salt and glycerine have been considered, but are not found persuasive. As discussed above, the instant claims include a pharmaceutical carrier. Glycine and sodium chloride are well-known pharmaceutical carrier agents, therefore, the inclusion of them as taught in the cited prior art would then render the instant claims obvious.

Furthermore, applicant argues that the instant claims recite the transitional phrase "consisting of" and therefore, the other components disclosed in the cited prior arts are excluded. Such arguments have been considered, but are not found persuasive. The instant claims recite a method of inactivating virus by employing a

composition consisting of a carrier and a synergistic combination. In essence, Applicant does not exclude the agents taught in the cited prior art. And therefore, the instant claims are properly rejected under 35 USC 103(a).

Applicant's rebuttal arguments file November 5, 2004 averring the cited prior art's failure to provide motivations or suggestion to combine isopropanol and hydrochloric acid have been considered, but are not found persuasive. The motivation is based on the fact that hydrochloric acid is known to be effective in against goat-pox virus and isopropanol is a well-known solvent and disinfectant. Combining these two agents for very same purpose would be obvious, absent evidence to the contrary.

Applicant's rebuttal arguments filed November 5, 2004 averring Bhatia not teaching the herein claimed method of inactivating herpes and/or pox virus have been considered, but are not found persuasive. Although the cited prior art not expressly teaches the prophylaxis effectiveness, based on the teachings of Bhatia et al., hydrochloric acid is known to be effective in killing pox virus. Therefore, applying a hydrochloric acid composition to kill pox virus and thus, inactivate the viruses, would have been reasonably expected to be effective.

Applicant's rebuttal arguments filed November 5, 2004 averring Bhatia merely teaching the *in vitro* employment of hydrochloric acid and isopropanol to kill goat-pox viruses and therefore, not suggest the herein claimed method of inactivating herpes and/or pox virus have been considered, but are not found persuasive. Since both hydrochloric acid is known to be effective in against goat-pox virus and isopropanol is a well-known solvent and disinfectant, the employment of both agents would have been

reasonably expected to exert the very same antiviral effect, and thus, useful as effective method to inactivate pox viruses thereby.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to San-ming Hui whose telephone number is (571) 272-0626. The examiner can normally be reached on Mon 9:00 to 1:00, Tu - Fri from 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sreeni Padmanabhan, PhD., can be reached on (571) 272-0629. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

San-ming Hui
Primary Examiner
Art Unit 1617